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What is claimed is:

1 1. A communication satellite comprising:
2 a self addressed packet switch routing uplink
3 data to a memory, the uplink data destined for at
4 least one of a first and a second downlink beam hop
5 location; and

6 a switch that directs a waveform derived in part
7 from the uplink data to a selected radiating element
8 of a multiple beam array antenna in response to a hop
9 selection signal; wherein

10 the multiple beam array antenna directs the
11 waveform to at least one of the first downlink beam
12 hop location and the second downlink beam hop
13 location.

1 2. The communication satellite of claim 1,
2 wherein the memory comprises queues assigned to the
3 first and the second downlink beam hop location.

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The communication satellite
the memory comprises queues
location and priority.

The communication satellite
the memory comprises
shed by a code rate.

The communication satellite
the queues are distinguished
s, a plurality code rates,
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beam

1 5. The communication satellite of claim 4,
2 wherein the queues are distinguished by a plurality
3 priorities, a plurality code rates, and a plurality
4 ~~hop locations.~~

1 6. The communication satellite of claim 1,
2 wherein the multiple beam array antenna comprises a
3 plurality of radiating elements each assigned to a
4 different downlink beam hop location.

1 7. The communication satellite of claim 1,
2 wherein the multiple beam array antenna comprises at
3 least a first radiating element for the first downlink
4 beam hop location and a second radiating element for
5 the second downlink beam hop location, the first and

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6 second radiating elements feeding at least one
7 reflector.

1 8. The communication satellite of claim 7,
2 wherein the first and second radiating element are
3 feedhorns.

1 9. A data routing subsystem for a communication
2 satellite, the subsystem comprising:

3 an inbound module accepting demodulated uplink
4 data, the inbound module including a routing table
5 that stores queue tags specifying downlink beam hop
6 locations for the uplink data;

7 a switch having an input port coupled to the
8 inbound module;

9 an outbound module coupled to an output port of
10 the switch, the outbound module including a memory for
11 storing the uplink data according to the downlink beam
12 ~~hop locations; and~~

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1 10. The data routing subsystem of claim 9,
2 wherein the first and second feed elements are feed
3 horns.

1 11. The data routing subsystem of claim 9,
2 wherein the queue tag further specifies code rate for
3 the uplink data.

1 12. The data routing subsystem of claim 11,
2 wherein the queue tag further specifies priority for
3 the uplink data.

1 13. The data routing subsystem of claim 9,
2 wherein the routing table additionally stores routing
3 tags indicative of at least one switch output port.

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1 14. The data routing subsystem of claim 9,
2 wherein the routing table is addressed with an address
3 included in the uplink data.

1 15. The data routing subsystem of claim 14,
2 wherein the address is at least one of a VPI and VCI
3 field in an ATM cell.

1 16. The data routing subsystem of claim 15,
2 wherein the routing additionally stores a replacement
3 address for the uplink data.

1 17. A method for communicating data through a
2 communication satellite, the method comprising:

3 looking up a memory queue indicative of hop
4 location using an address included in uplink data.

5 storing the uplink data in the memory queue;

6 retrieving the uplink data and preparing a
7 waveform to be transmitted;

8 selecting a feed path for the waveform according
9 to the hop location; and

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